CDP-CE500

SERVICE MANUAL

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CDP-CE500

SERVICE MANUAL

US Model

• MPEG Layer-3 audio coding technology and patents licensed from Fraunhofer IIS and Thomson.
• Windows Media is a registered trademark of Microsoft Corporation in the United States and/or other countries.

Model Name Using Similar Mechanism	NEW
CD Mechanism Type	CDM59-DA11
Base Unit Name	BU-DA11BD75
Optical Pick-up Block Name	DA11MMVGP

SPECIFICATIONS

CD player section

Laser	Semiconductor laser (λ = 780 nm) Emission duration: continuous
Frequency response	2 Hz to 20 kHz ± 0.5 dB
Dynamic range	More than 90 dB
Harmonic distortion	Less than 0.006%
Laser Diode Properties	Emission Duration: Continuous Laser Output: Less than 44.6 µW

* This output is the value measurement at a distance of 200 mm from the objective lens surface on the optical pick-up block with 7 mm aperture.

USB section

Supported bit rate	MP3 (MPEG 1 Audio Layer 3): 32 kbps – 320 kbps, VBR WMA: 48 kbps – 192 kbps AAC: 48 kbps – 320 kbps
Sampling frequencies	MP3 (MPEG 1 Audio Layer 3): 32 kHz/ 44.1 kHz/48 kHz WMA: 44.1 kHz AAC: 44.1 kHz
USB port	Maximum current: 500 mA

Outputs

	Jack type	Maximum output level	Load impedance
ANALOG OUT	Phono jacks	2 V (at 50 kilohms)	Over 10 kilohms
DIGITAL OUT OPTICAL	Optical output jack	–18 dBm	Wave length: 660 nm

General

Power requirements	120 V AC, 60 Hz
Power consumption	16 W
Dimensions (approx.) (w/h/d)	430 mm × 110 mm × 400 mm (17 in × 4 3/8 in × 15 3/4 in) incl. projecting parts
Mass (approx.)	5.2 kg (11 lbs 1 oz)

Supplied accessories

Audio cord	Red and white (1)
Remote commander	RM-ASU100 (1)
Battery	R6 (size-AA) (2)

Design and specifications are subject to change without notice.

• Standby power consumption: 0.3 W
• Halogenated flame retardants are not used in the certain printed wiring boards.

COMPACT DISC PLAYER

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check:
Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage.
Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes.). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

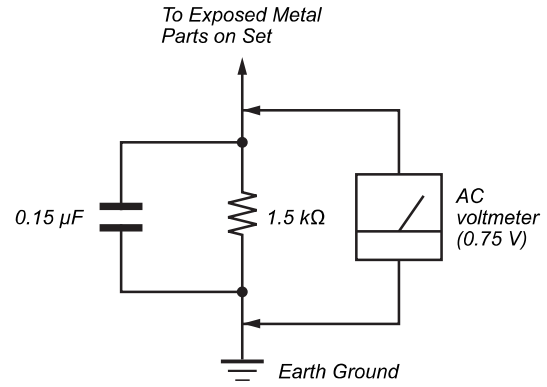


Fig. A. Using an AC voltmeter to check AC leakage.

SAFETY-RELATED COMPONENT WARNING!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION.
REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

TABLE OF CONTENTS

1. SERVICING NOTES 4

2. DISASSEMBLY
2-1. Disassembly Flow 6
2-2. Case 6
2-3. Front Panel Block 7
2-4. CD Mechanism Deck (CDM59-DA11) 8
2-5. MAIN Board 9
2-6. USB-AUDIO Board 9
2-7. Table Block 10
2-8. Tray 11
2-9. Chucking (DA11) Pulley Assy 11
2-10. Rotary Motor Assy (M11), SENSOR Board 12
2-11. Gear (RV), Gear (U/D), Swing Gear 13
2-12. Loading Motor Assy (M10), LOADING MOTOR Board 14
2-13. JUNCTION Board 15
2-14. Base Unit Block 15
2-15. Base Unit (BU-DA11BD75) 16
2-16. Optical Pick-up Block (DA11MMVGP) 16

3. EXPLODED VIEWS
3-1. Case Section 17
3-2. Front Panel Section 18
3-3. Chassis Section 19
3-4. CD Mechanism Deck Section (Table Block) (CDM59-DA11) 20
3-5. CD Mechanism Deck Section (Chassis Block) (CDM59-DA11) 21
3-6. Base Unit Section 22

4. ACCESSORIES 23

SECTION 1
SERVICING NOTES

The SERVICING NOTES contains important information for servicing. Be sure to read this section before repairing the unit.

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body. During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repair parts.
The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pickup block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens.

UNLEADED SOLDER

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.
(**Caution:** Some printed circuit boards may not come printed with the lead free mark due to their particular size)

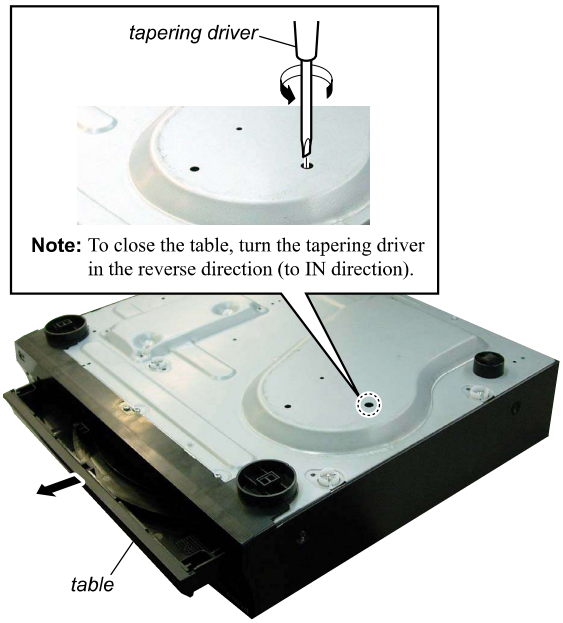
: LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40 °C higher than ordinary solder.
  Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
  Soldering irons using a temperature regulator should be set to about 350 °C.
  Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
  Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
  It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

HOW TO OPEN THE DISC TABLE WHEN POWER SWITCH TURNS OFF

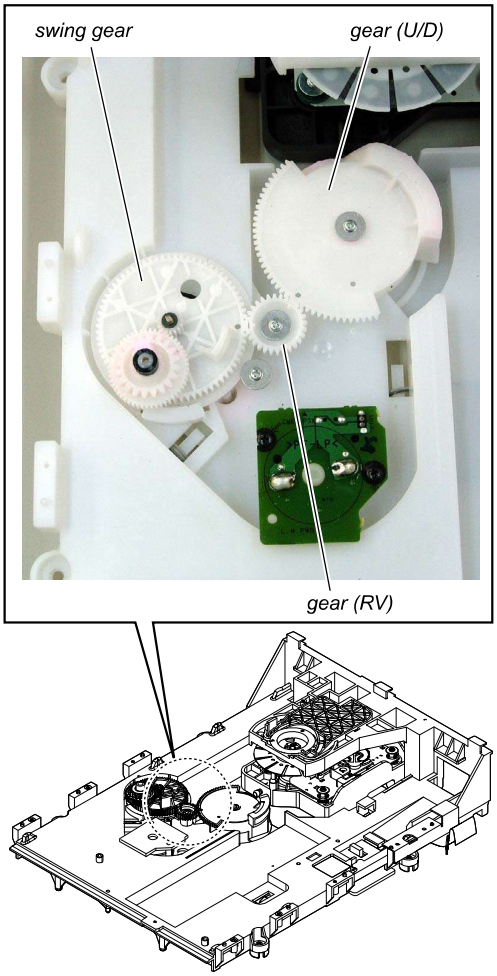
Insert a tapering driver into the aperture of the unit bottom, and turn it in the direction of the arrow (to OUT direction).



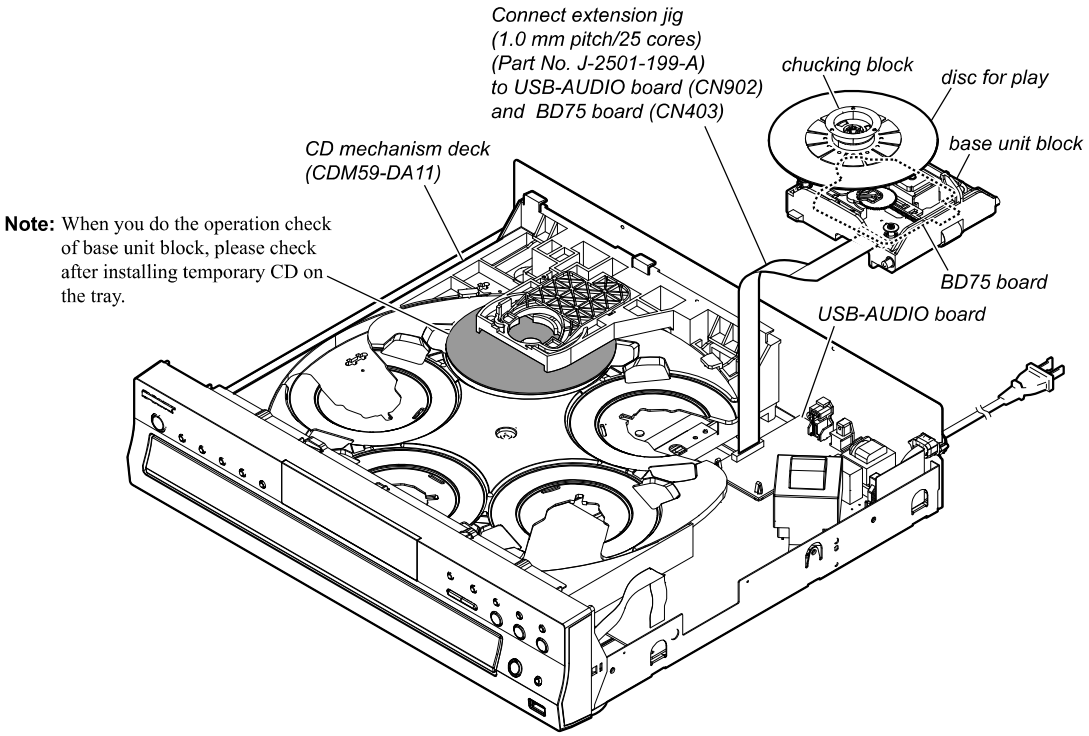
– bottom view –

NOTE FOR GEAR INSTALLATION

When following gears are installed, it is necessary to phase it. Please refer to "2-11. GEAR (RV), GEAR (U/D), SWING GEAR" (page 13).



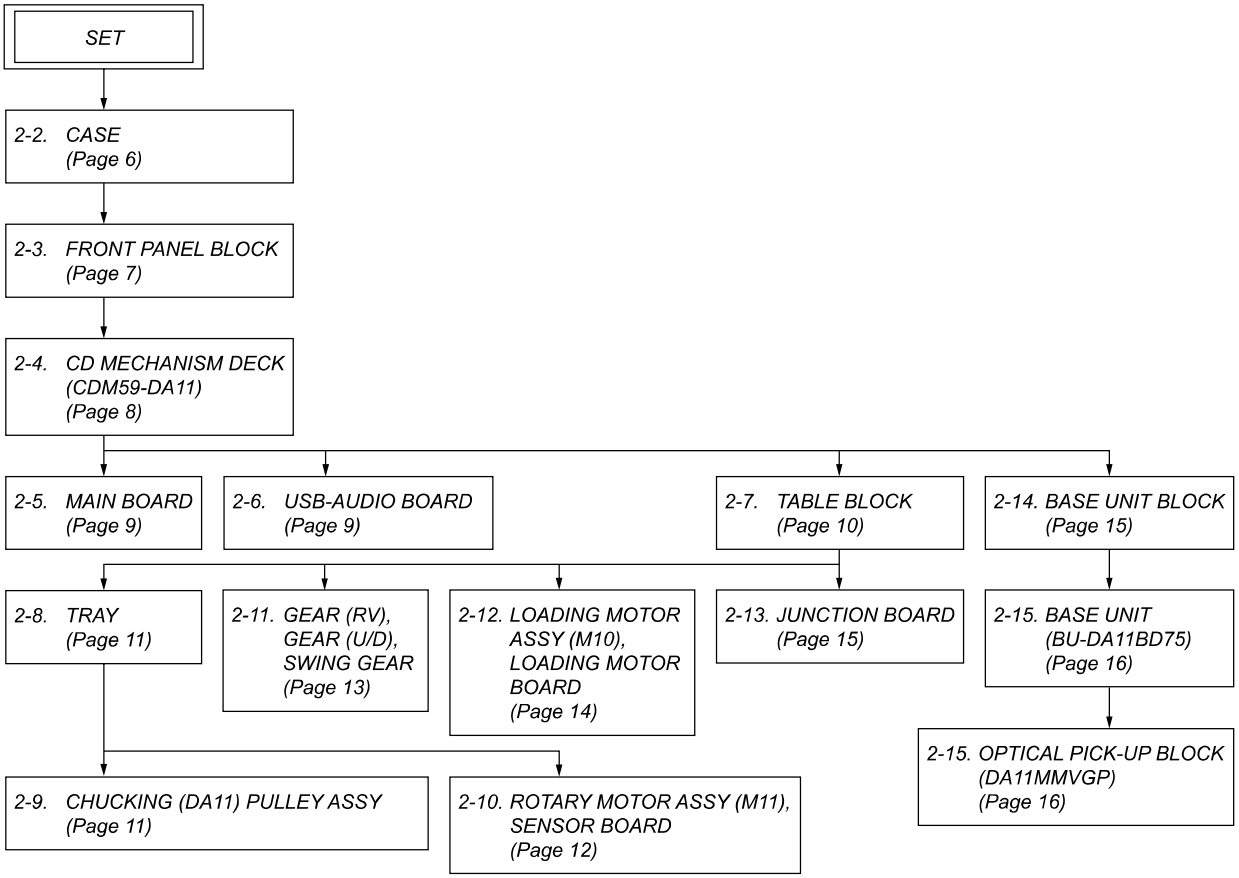
CD MECHANISM DECK SERVICE POSITION


Connect extension jig
(1.0 mm pitch/25 cores)
(Part No. J-2501-199-A)
to USB-AUDIO board (CN902)
and BD75 board (CN403)
chucking block
disc for play
base unit block
CD mechanism deck
(CDM59-DA11)
Note: When you do the operation check of base unit block, please check after installing temporary CD on the tray.
BD75 board
USB-AUDIO board

SECTION 2
DISASSEMBLY

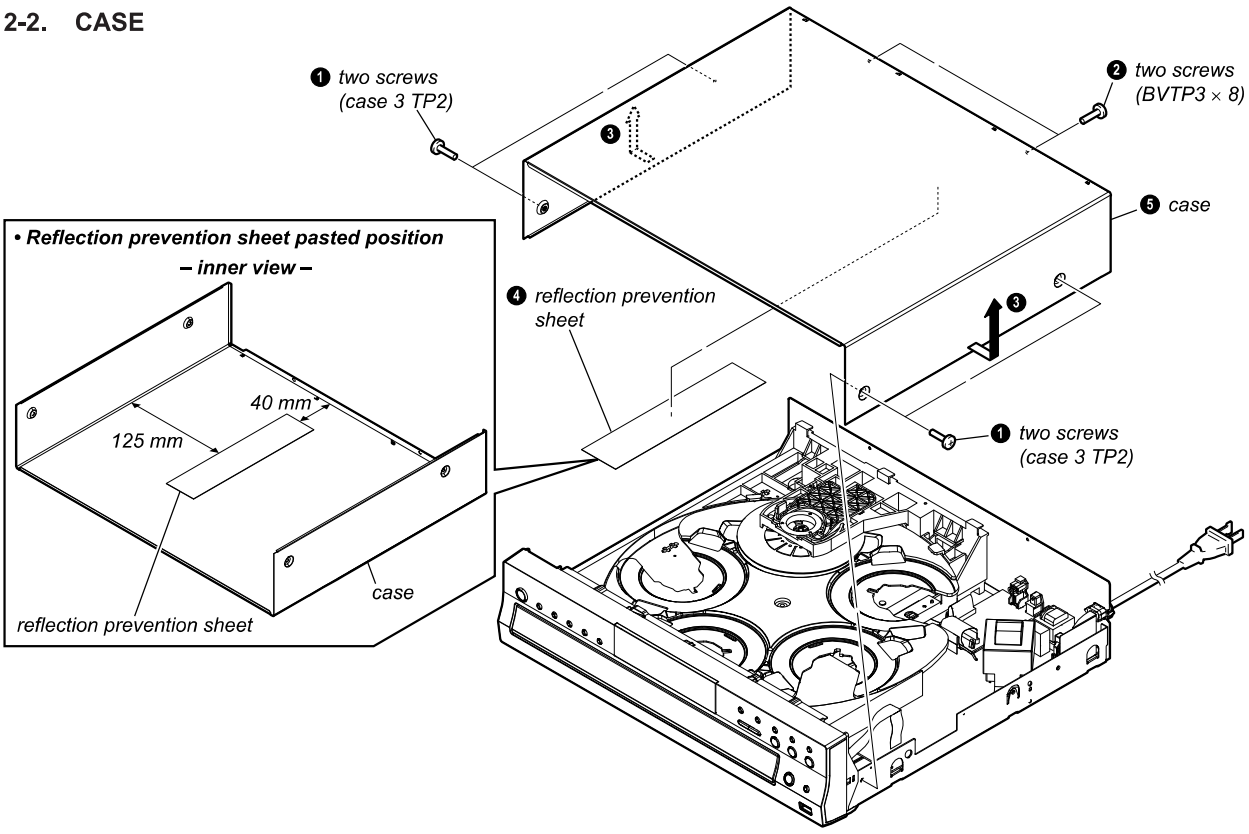
- This set can be disassembled in the order shown below.

2-1. DISASSEMBLY FLOW

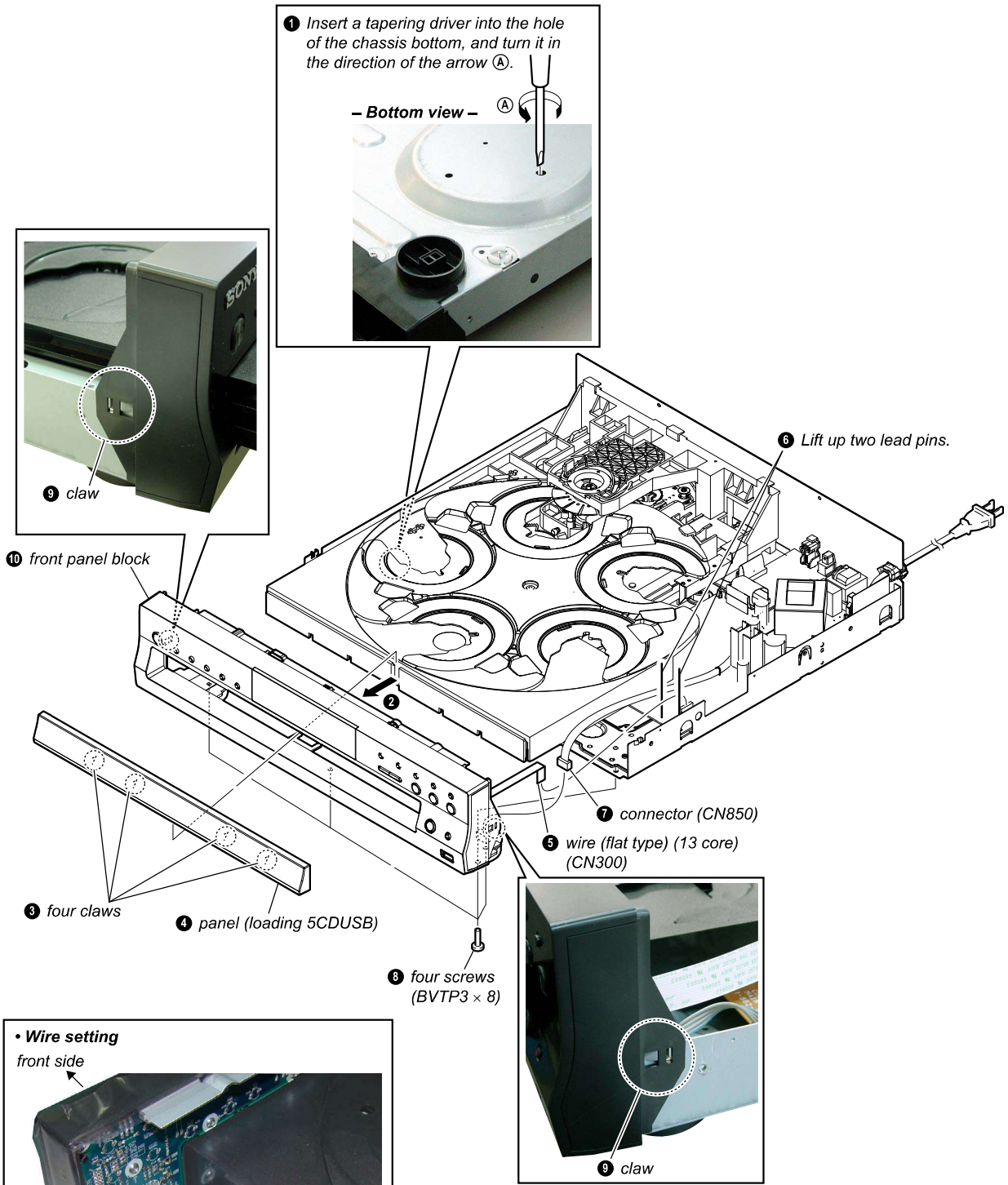

SET
2-2. CASE (Page 6)
2-3. FRONT PANEL BLOCK (Page 7)
2-4. CD MECHANISM DECK (CDM59-DA11) (Page 8)
2-5. MAIN BOARD (Page 9)
2-6. USB-AUDIO BOARD (Page 9)
2-7. TABLE BLOCK (Page 10)
2-14. BASE UNIT BLOCK (Page 15)
2-8. TRAY (Page 11)
2-11. GEAR (RV), GEAR (U/D), SWING GEAR (Page 13)
2-12. LOADING MOTOR ASSY (M10), LOADING MOTOR BOARD (Page 14)
2-13. JUNCTION BOARD (Page 15)
2-15. BASE UNIT (BU-DA11BD75) (Page 16)
2-9. CHUCKING (DA11) PULLEY ASSY (Page 11)
2-10. ROTARY MOTOR ASSY (M11), SENSOR BOARD (Page 12)
2-15. OPTICAL PICK-UP BLOCK (DA11MMVGP) (Page 16)

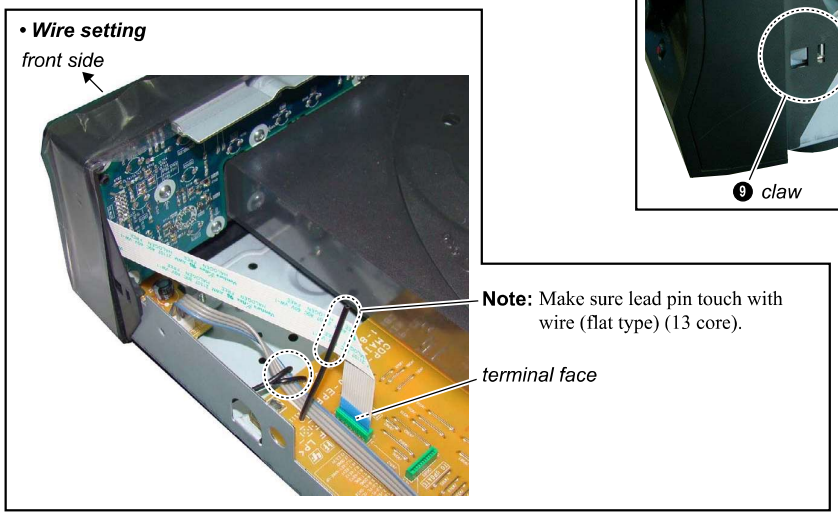
Note: Follow the disassembly procedure in the numerical order given.

2-2. CASE

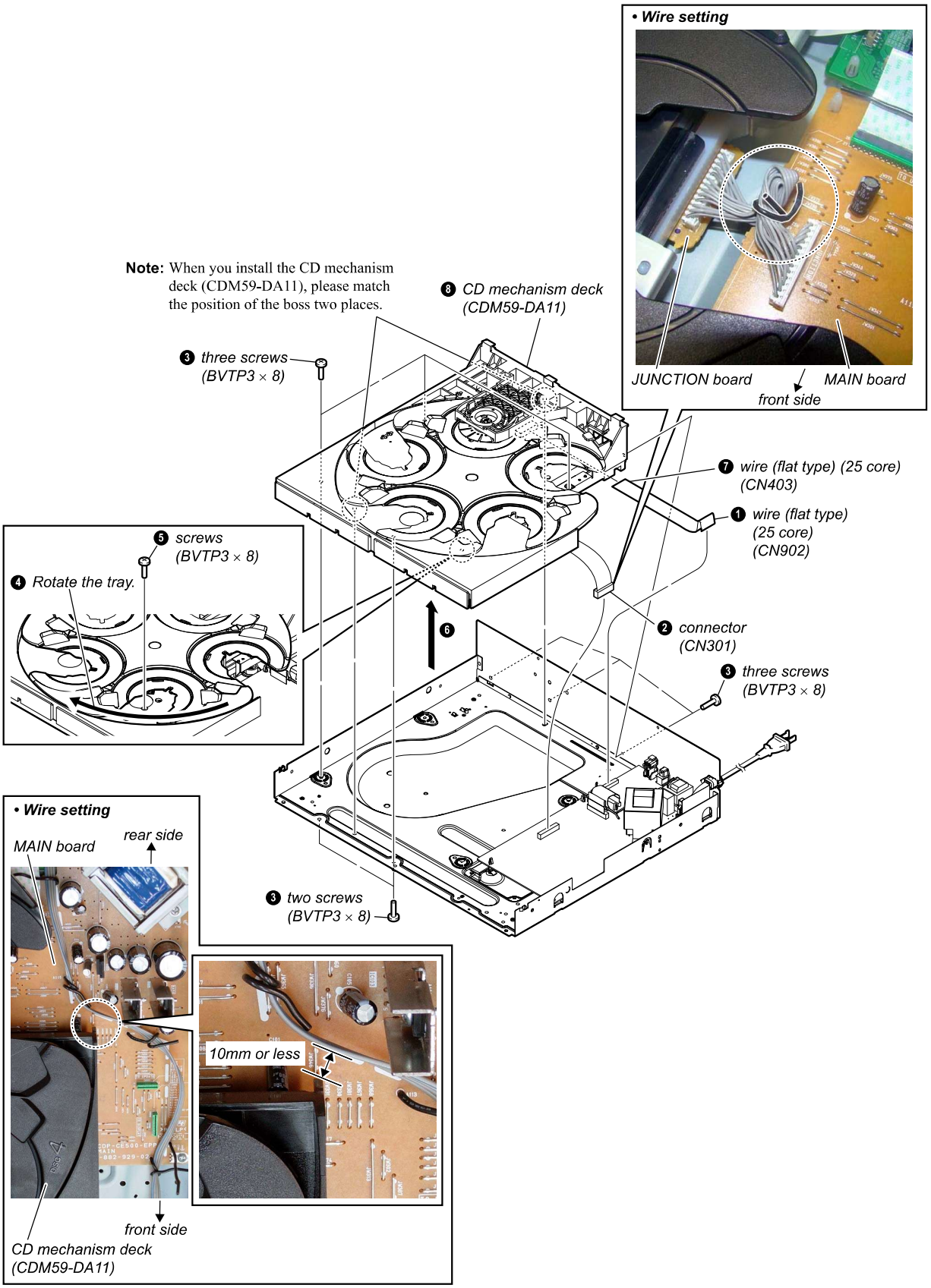


2-3. FRONT PANEL BLOCK

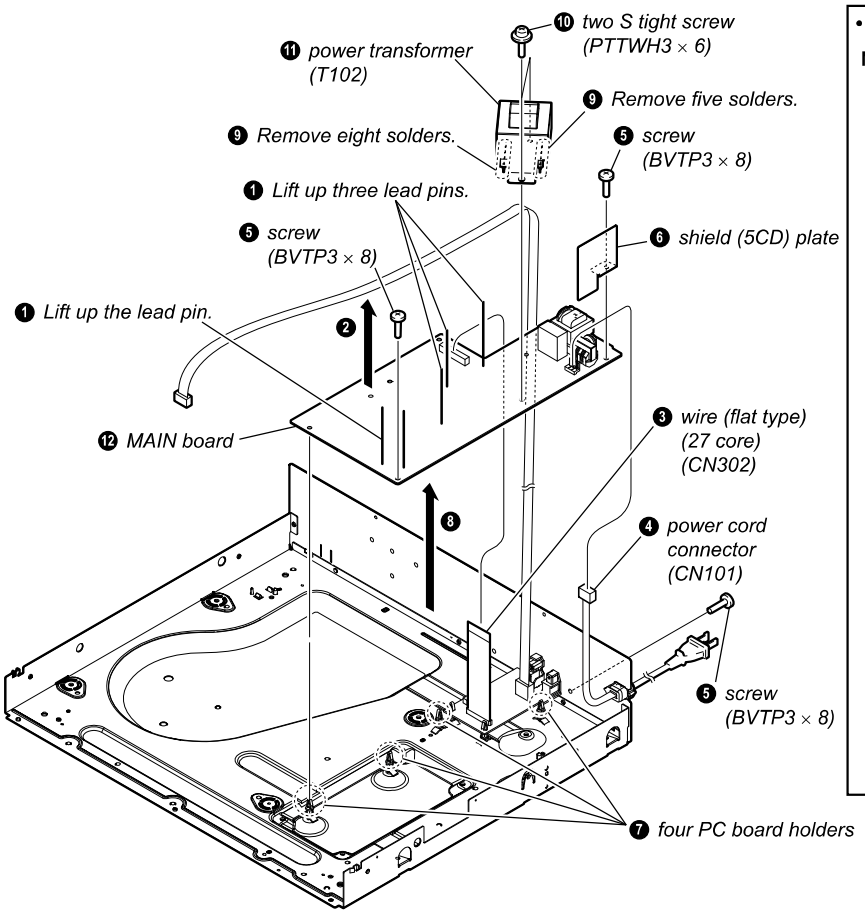

❶ Insert a tapering driver into the hole of the chassis bottom, and turn it in the direction of the arrow Ⓐ.
– Bottom view –
Ⓐ
❾ claw
❿ front panel block
❻ Lift up two lead pins.
❷
❼ connector (CN850)
❺ wire (flat type) (13 core) (CN300)
❸ four claws
❹ panel (loading 5CDUSB)
❽ four screws (BVTP3 × 8)
❾ claw



2-4. CD MECHANISM DECK (CDM59-DA11)

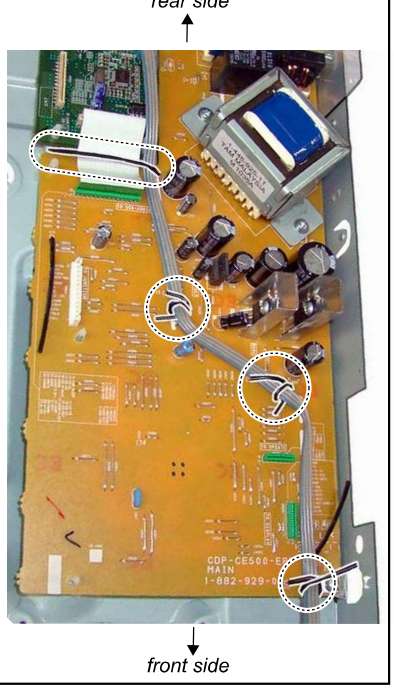

• Wire setting
JUNCTION board
MAIN board
front side
Note: When you install the CD mechanism deck (CDM59-DA11), please match the position of the boss two places.
❽ CD mechanism deck (CDM59-DA11)
❸ three screws (BVTP3 × 8)
❼ wire (flat type) (25 core) (CN403)
❶ wire (flat type) (25 core) (CN902)
❺ screws (BVTP3 × 8)
❹ Rotate the tray.
❻
❷ connector (CN301)
❸ three screws (BVTP3 × 8)
❸ two screws (BVTP3 × 8)
• Wire setting
MAIN board
rear side
10mm or less
front side
CD mechanism deck (CDM59-DA11)

2-5. MAIN BOARD

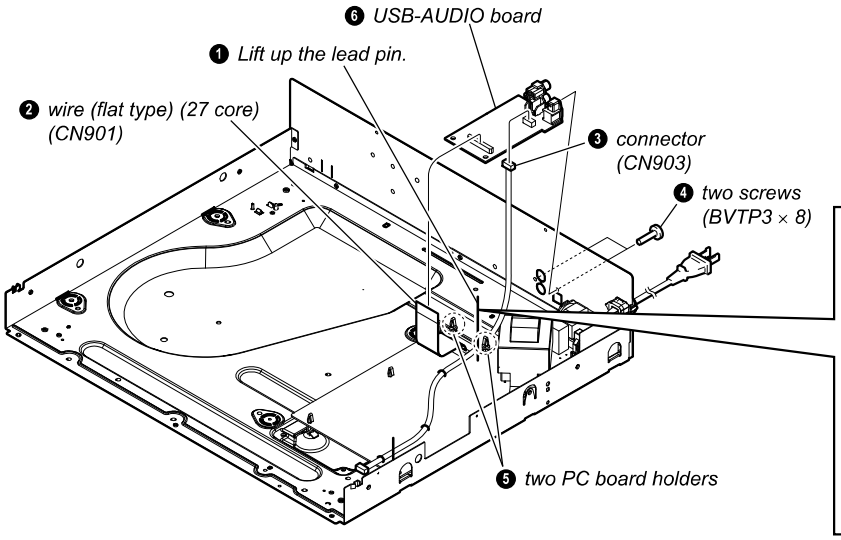

⑩ two S tight screw (PTTWH3 × 6)
⑪ power transformer (T102)
⑨ Remove five solders.
⑨ Remove eight solders.
❺ screw (BVTP3 × 8)
❶ Lift up three lead pins.
❺ screw (BVTP3 × 8)
❻ shield (5CD) plate
❶ Lift up the lead pin.
❷
❸ wire (flat type) (27 core) (CN302)
⑫ MAIN board
❽
❹ power cord connector (CN101)
❺ screw (BVTP3 × 8)
❼ four PC board holders

• Wire setting

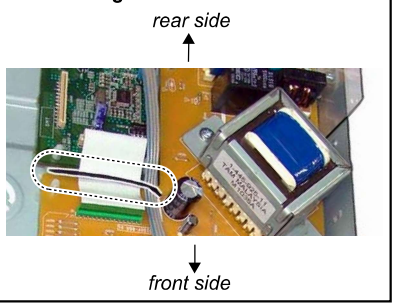
Note: Please arrange the wire along the dotted line on the MAIN board.



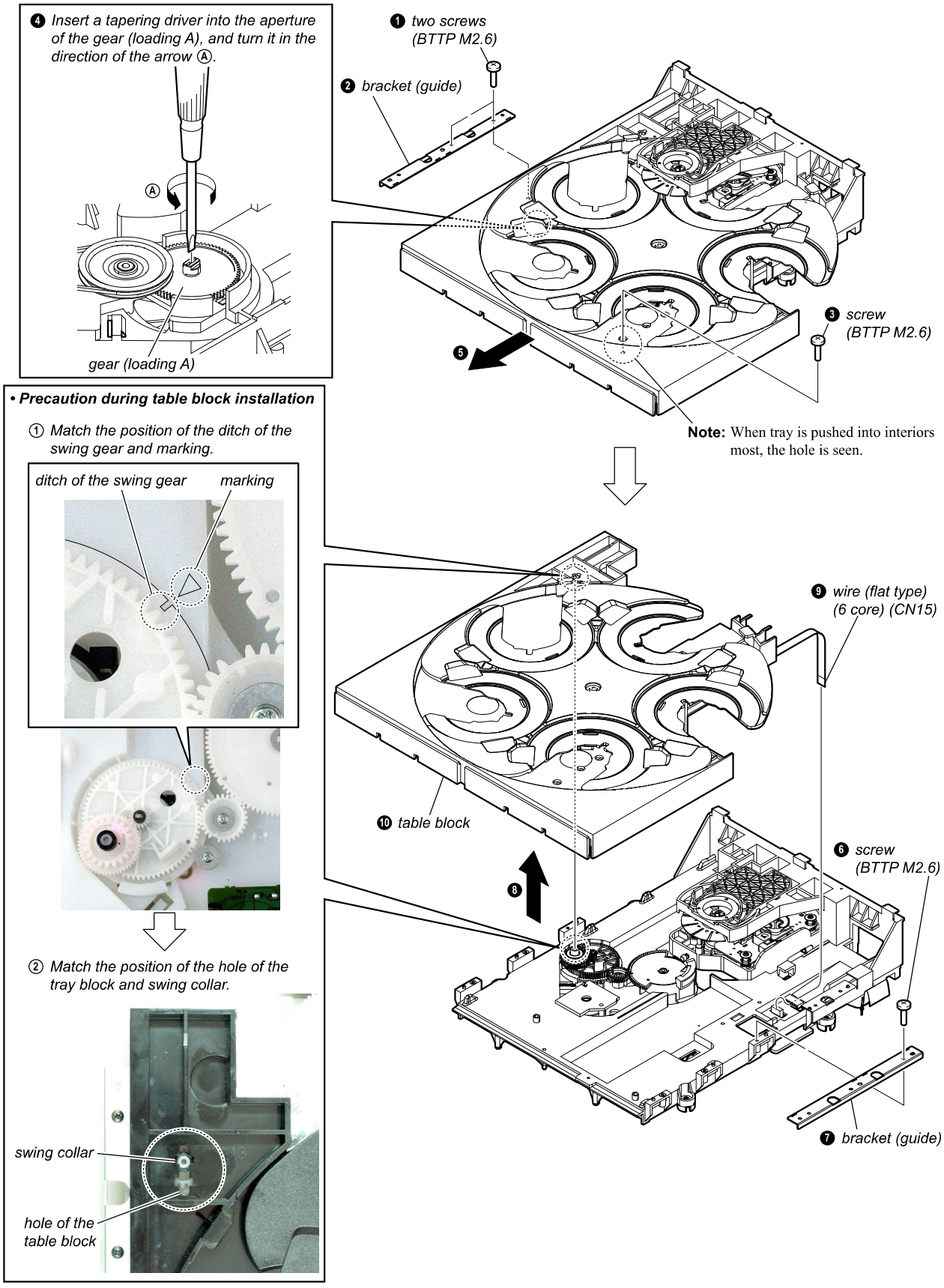
2-6. USB-AUDIO BOARD


❻ USB-AUDIO board
❶ Lift up the lead pin.
❷ wire (flat type) (27 core) (CN901)
❸ connector (CN903)
❹ two screws (BVTP3 × 8)
❺ two PC board holders

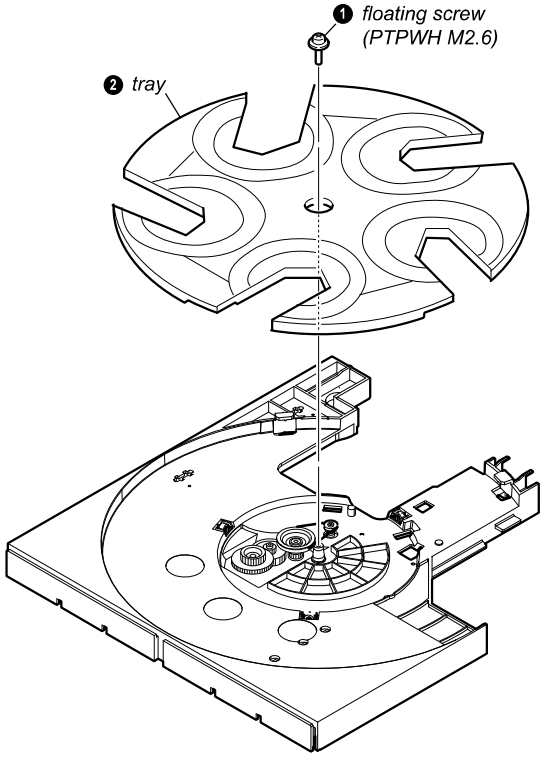
• Wire setting



2-7. TABLE BLOCK

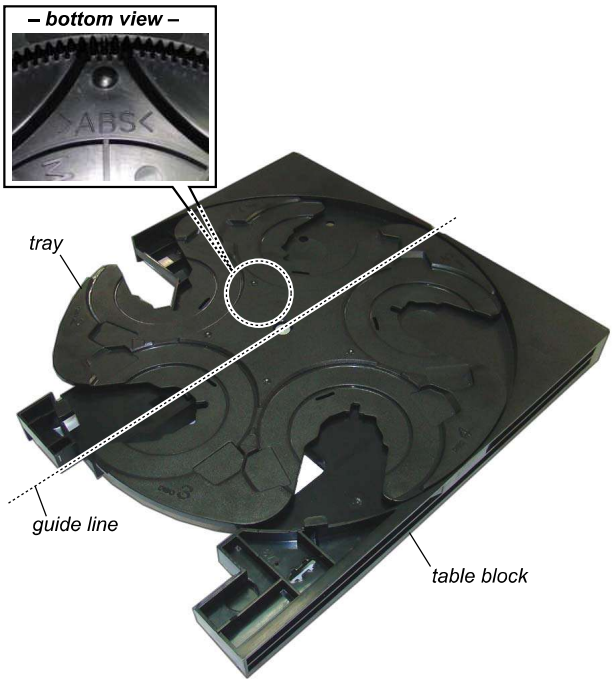

❹ Insert a tapering driver into the aperture of the gear (loading A), and turn it in the direction of the arrow Ⓐ.
Ⓐ
gear (loading A)
❶ two screws (BTTP M2.6)
❷ bracket (guide)
❸ screw (BTTP M2.6)
❺
Note: When tray is pushed into interiors most, the hole is seen.
• Precaution during table block installation
① Match the position of the ditch of the swing gear and marking.
ditch of the swing gear
marking
② Match the position of the hole of the tray block and swing collar.
swing collar
hole of the table block
❾ wire (flat type) (6 core) (CN15)
❿ table block
❽
❻ screw (BTTP M2.6)
❼ bracket (guide)

2-8. TRAY



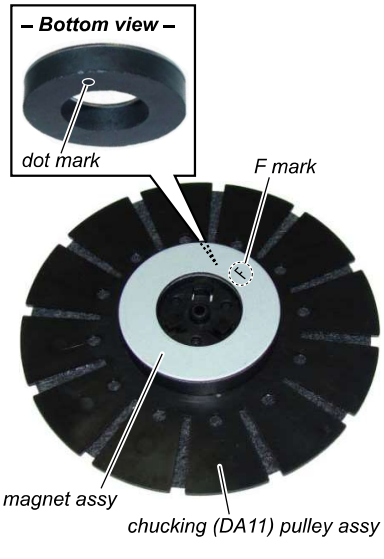
• Precaution during tray installation
– rear side view –

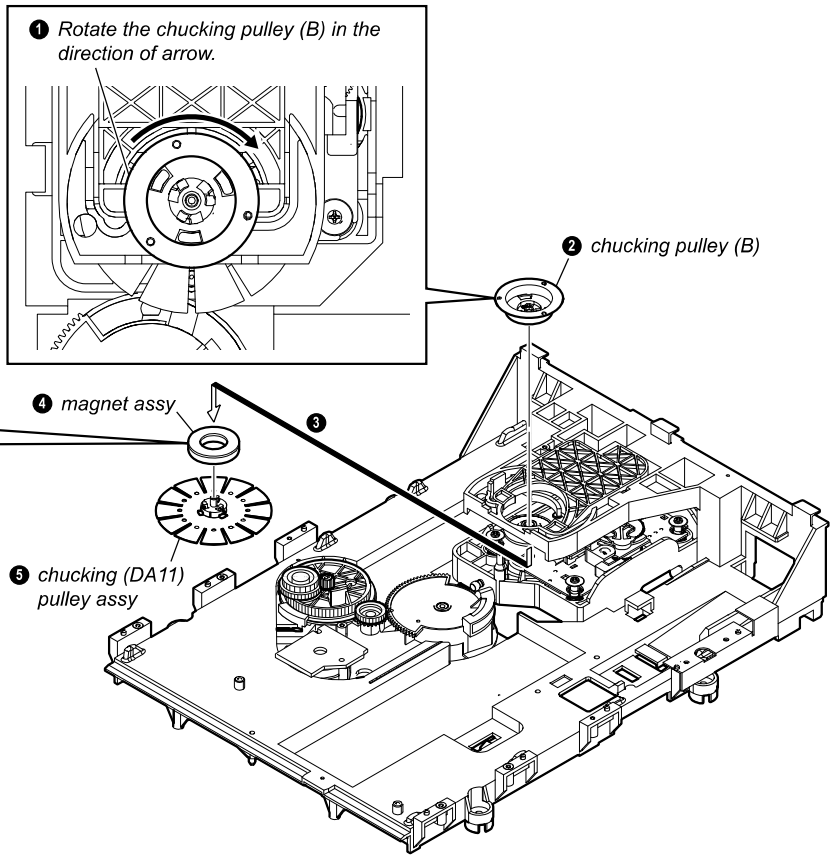
Note: Please install the tray referring to the figure below.



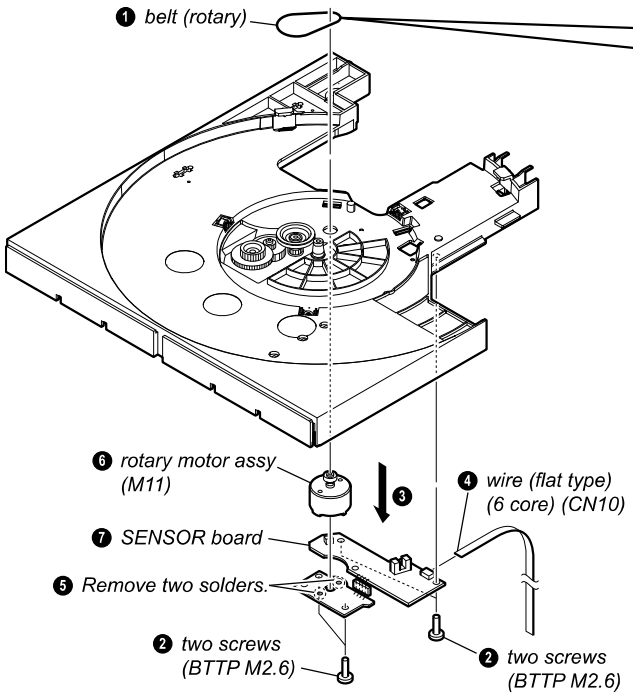
2-9. CHUCKING (DA11) PULLEY ASSY

Note: When you install the magnet assy on the chucking (DA11) pulley assy, please confirm F mark and the dot mark are seen.

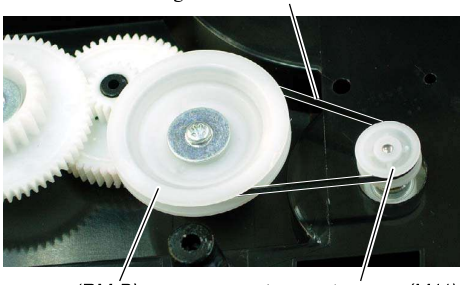




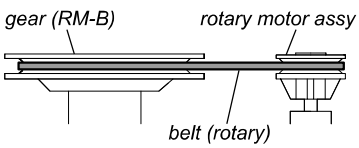
2-10. ROTARY MOTOR ASSY (M11), SENSOR BOARD


❶ belt (rotary)
❻ rotary motor assy (M11)
❸
❹ wire (flat type) (6 core) (CN10)
❼ SENSOR board
❺ Remove two solders.
❷ two screws (BTTP M2.6)
❷ two screws (BTTP M2.6)

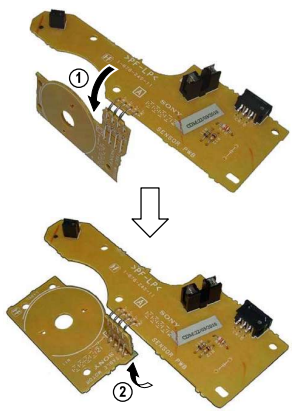
Note: Any twist of the belt (rotary) is not allowed. The belt (rotary) and the gear (RM-B) should be free from grease and dusts.



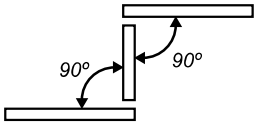
– Side view –



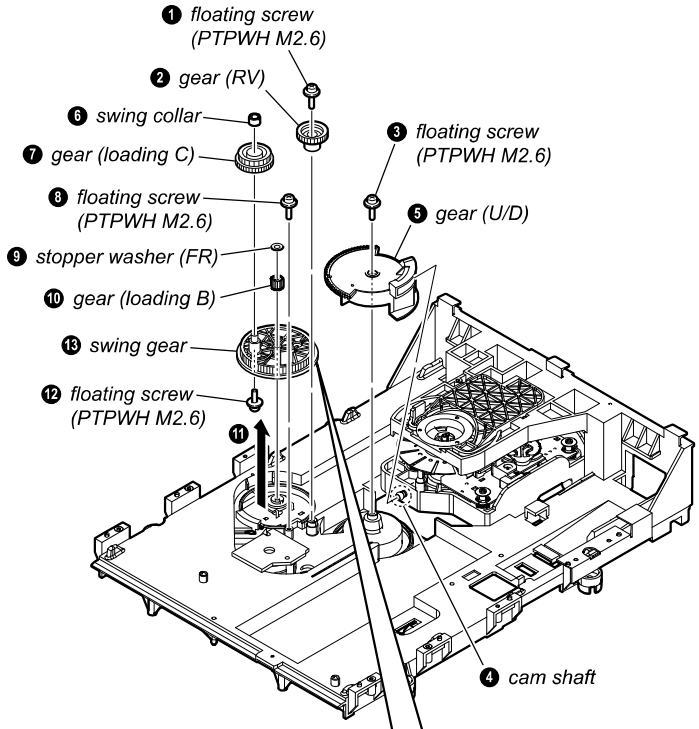
• Bend position of SENSOR board



– Side view –

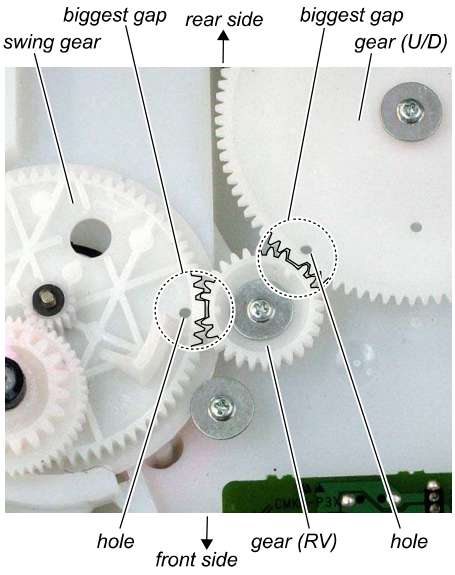


2-11. GEAR (RV), GEAR (U/D), SWING GEAR



• *Precaution during swing gear, gear (U/D) and gear (RV) installation*

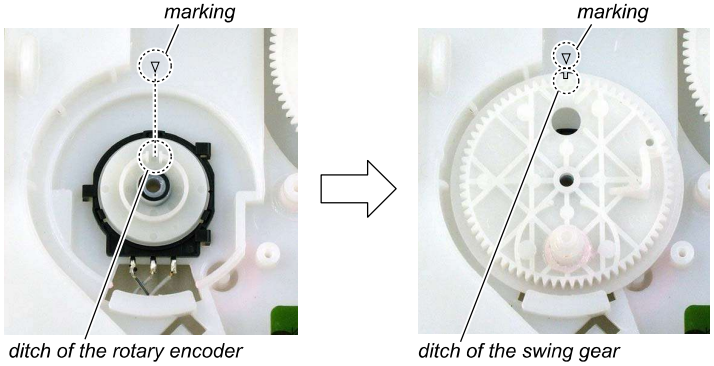
Note: Please make the hole of swing gear and hole of gear (U/D) a sign, and match the position of biggest gap of gear (RV) in two places.



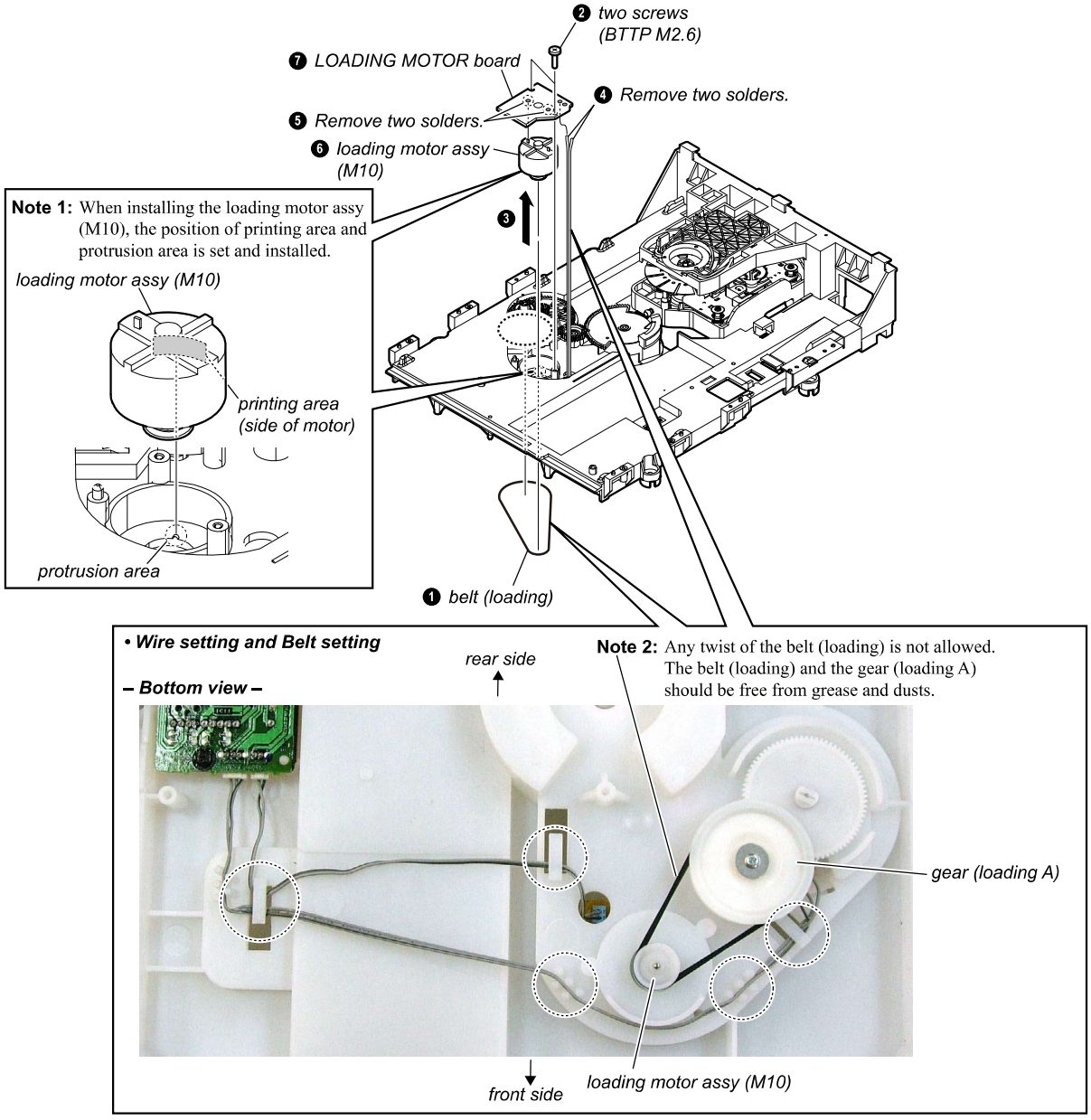
• *Precaution during rotary encoder installation*

① *Match the position of the ditch of the rotary encoder and marking.*

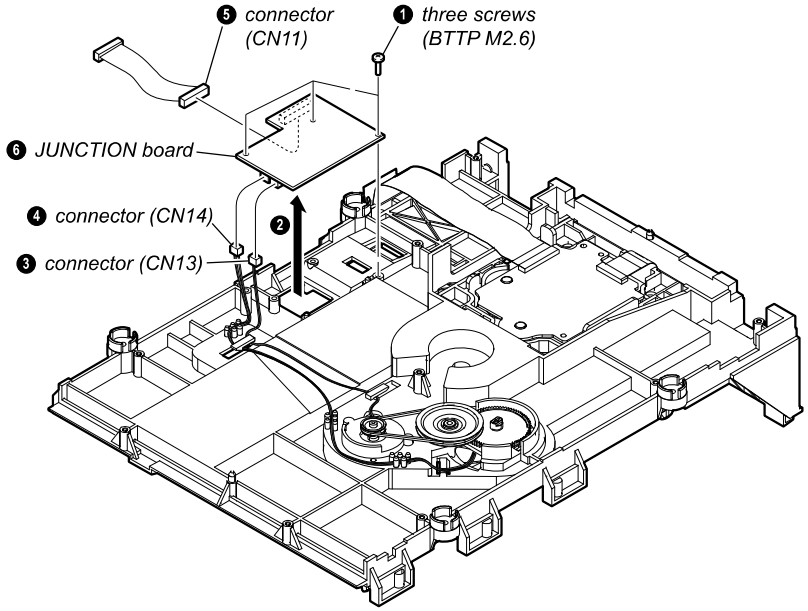
② *Match the position of the ditch of the swing gear and marking.*



2-12. LOADING MOTOR ASSY (M10), LOADING MOTOR BOARD

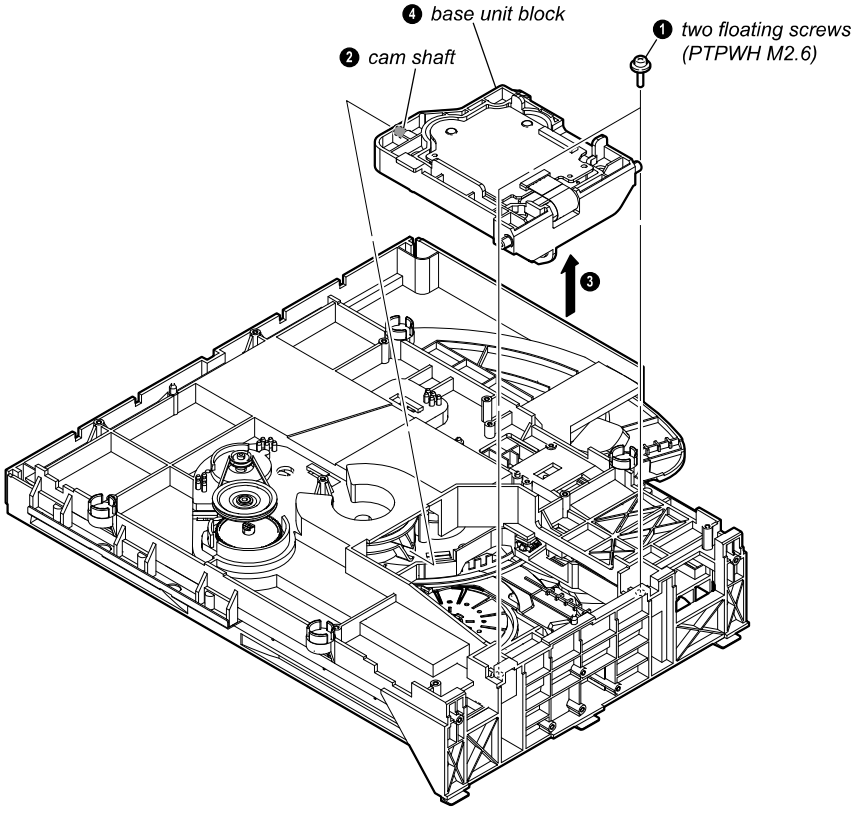

❷ two screws (BTTP M2.6)
❼ LOADING MOTOR board
❹ Remove two solders.
❺ Remove two solders.
❻ loading motor assy (M10)
❸
❶ belt (loading)
Note 1: When installing the loading motor assy (M10), the position of printing area and protrusion area is set and installed.
loading motor assy (M10)
printing area (side of motor)
protrusion area
• Wire setting and Belt setting
– Bottom view –
rear side
Note 2: Any twist of the belt (loading) is not allowed. The belt (loading) and the gear (loading A) should be free from grease and dusts.
gear (loading A)
front side
loading motor assy (M10)

2-13. JUNCTION BOARD



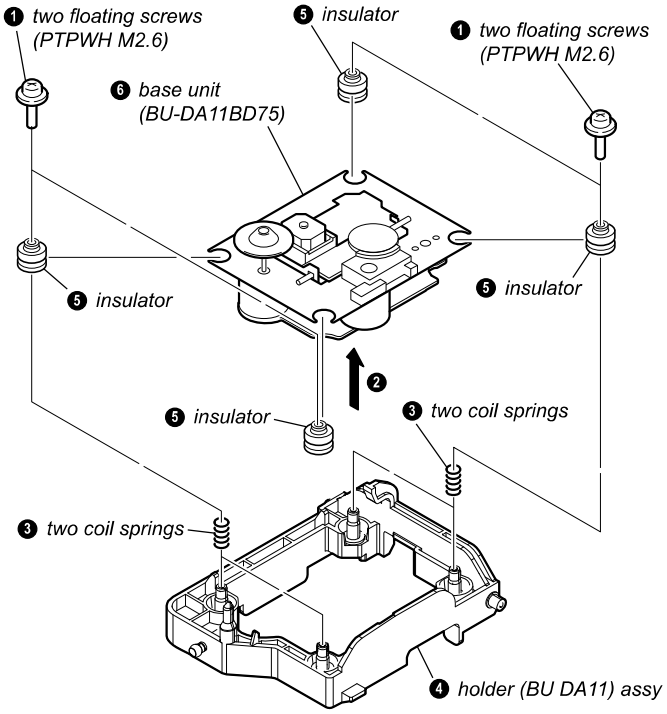
– CD mechanism deck bottom view (Front side) –

2-14. BASE UNIT BLOCK



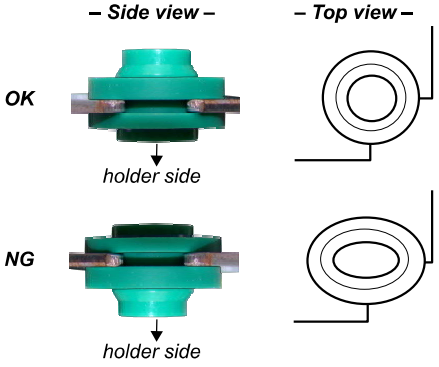
– CD mechanism deck bottom view (Rear side) –

2-15. BASE UNIT (BU-DA11BD75)



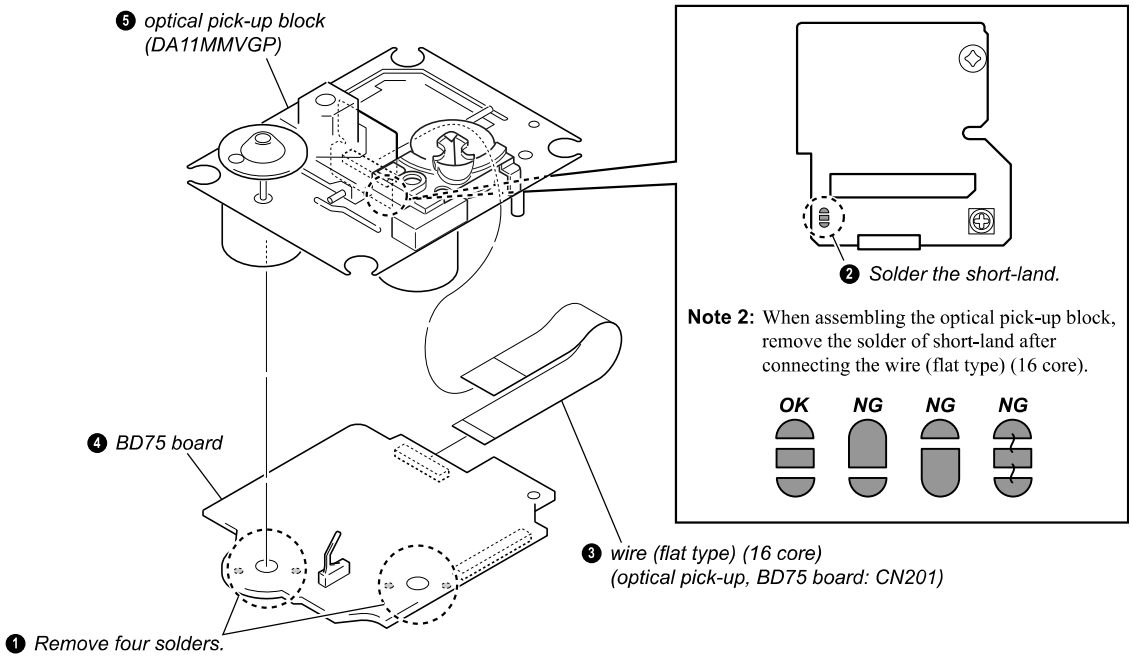
• Attention when insulator is installed

Note: When you install the insulator, please install it as shown in the figure below.



2-16. OPTICAL PICK-UP BLOCK (DA11MMVGP)

Note 1: When disconnecting the wire (flat type) (16 core) of optical pick-up block, solder the short-land.


5 optical pick-up block (DA11MMVGP)
2 Solder the short-land.
4 BD75 board
3 wire (flat type) (16 core) (optical pick-up, BD75 board: CN201)
1 Remove four solders.

Note 2: When assembling the optical pick-up block, remove the solder of short-land after connecting the wire (flat type) (16 core).

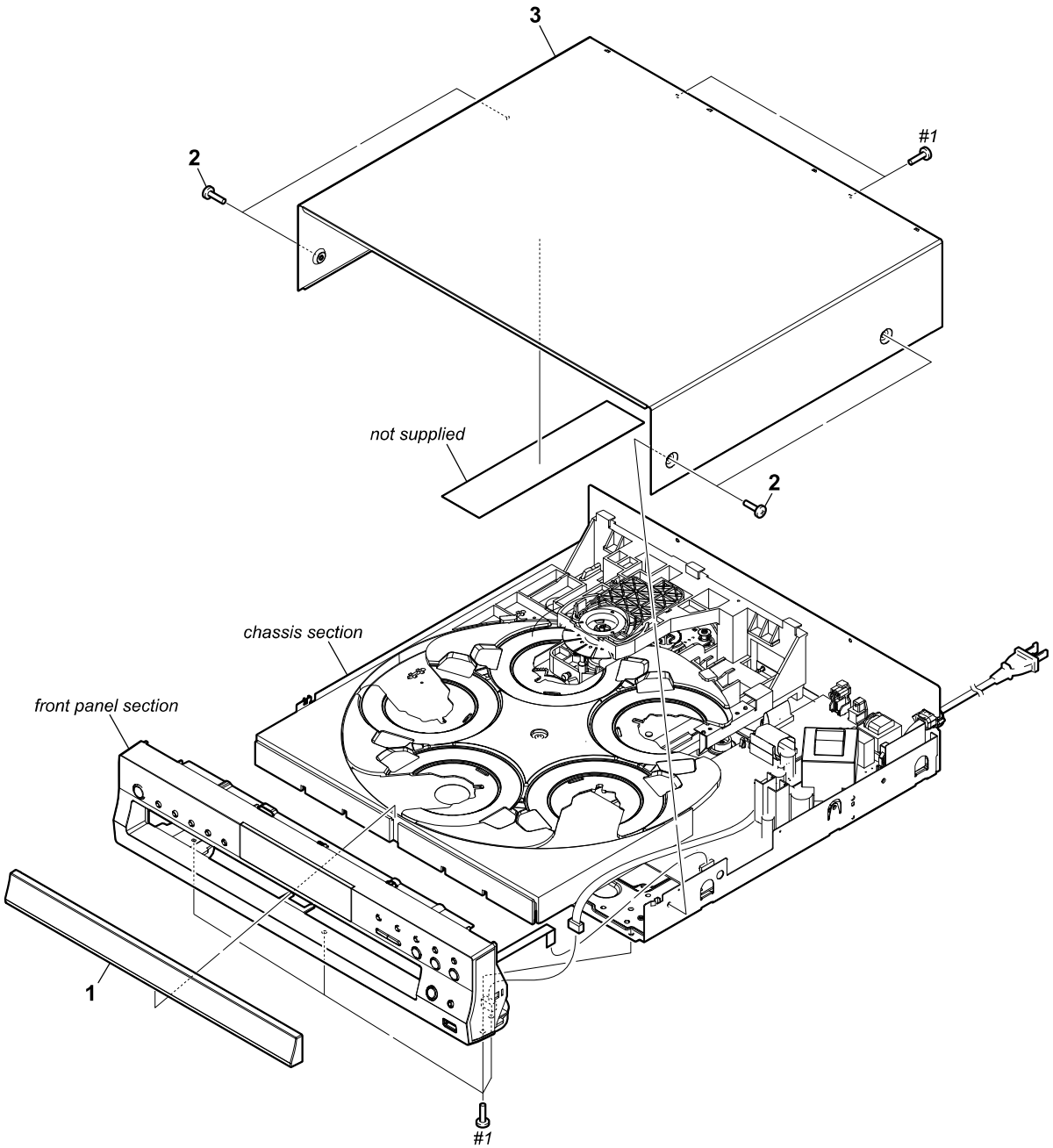
SECTION 3
EXPLODED VIEWS

Note:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Color Indication of Appearance Parts Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ Parts Color ↑ Cabinet's Color

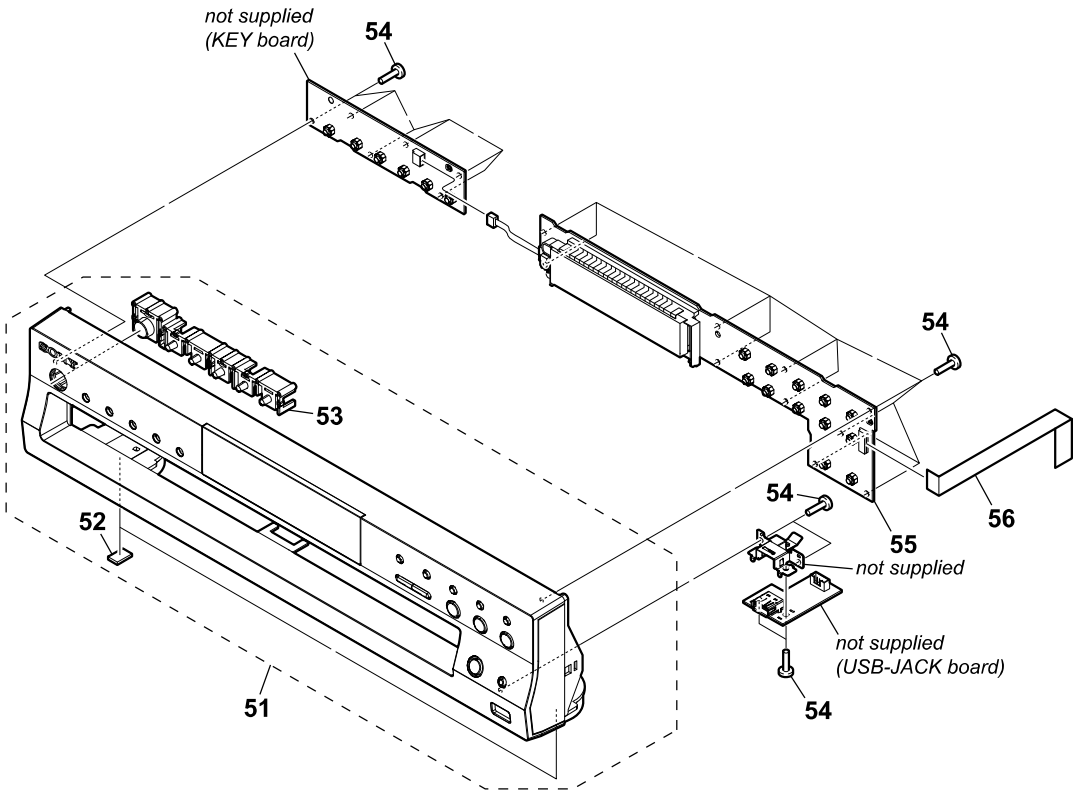
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

3-1. CASE SECTION



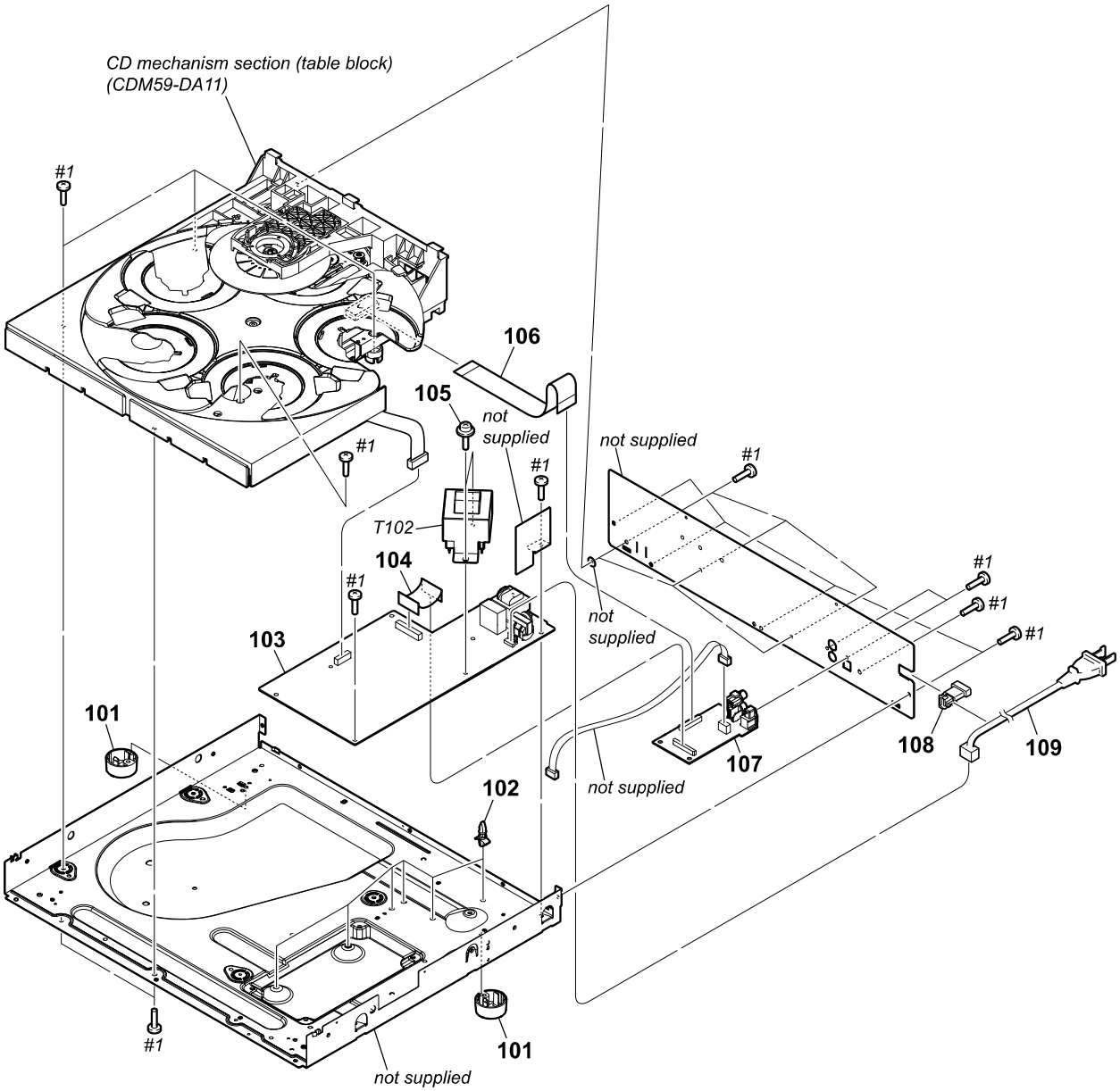
Ref. No.	Part No.	Description	Remark
1	4-198-742-01	PANEL (LOADING 5CDUSB)	
2	3-363-099-02	SCREW (CASE 3 TP2)	
3	4-231-686-11	CASE (409538)	
#1	7-685-646-71	SCREW +BVTP 3X8 TYPE2 IT-3	

3-2. FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark
51	X-2549-034-1	FRONT PANEL ASSY (5CDUSB)	
52	4-977-358-01	CUSHION	
53	4-198-738-01	BUTTON (DISC-POWER) (⏻, DISC1, DISC2, DISC3, DISC4, DISC5)	
54	3-087-053-01	+BVTP2,6 (3CR)	
55	A-1786-279-A	DISPLAY BOARD, COMPLETE	
56	1-828-330-61	WIRE (FLAT TYPE) (13 CORE)	

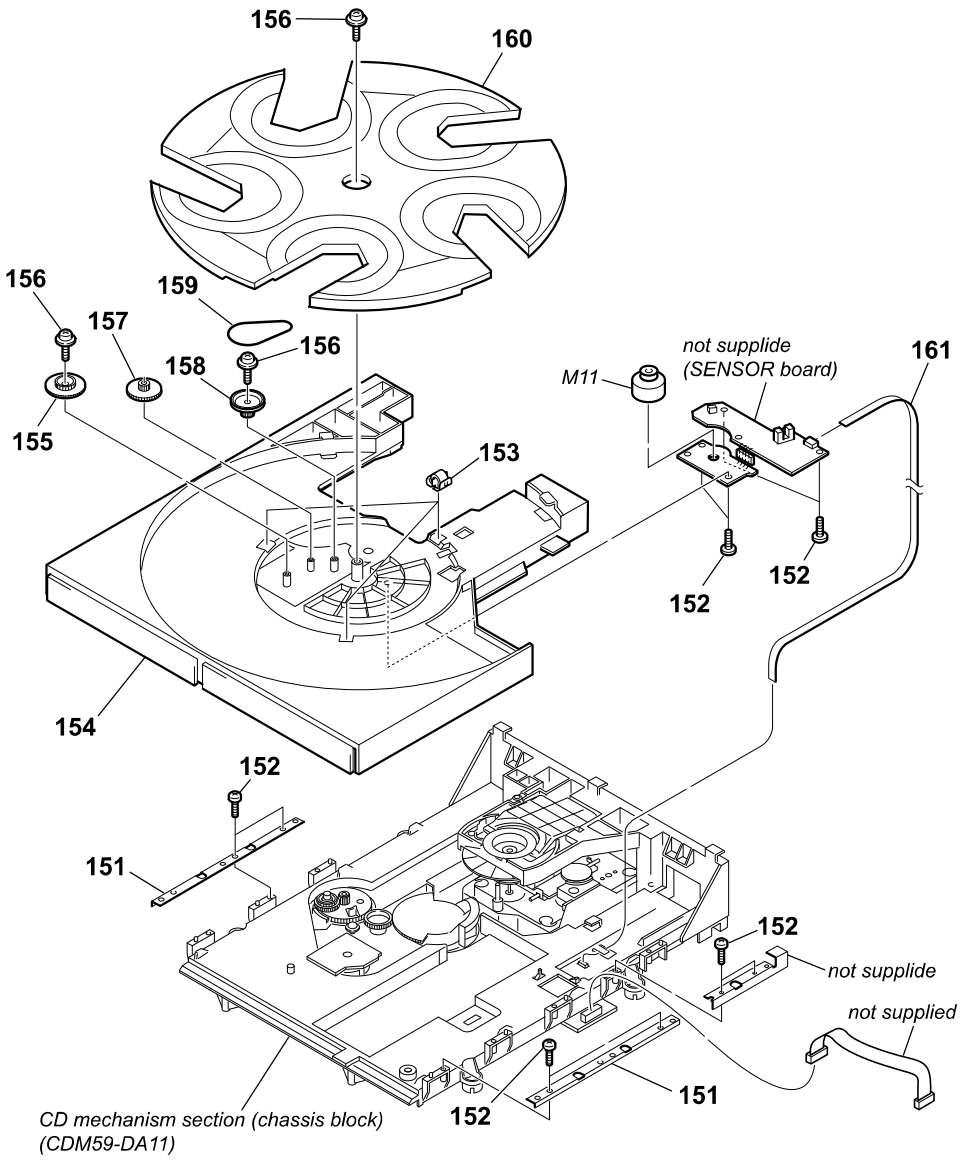
3-3. CHASSIS SECTION



Ref. No.	Part No.	Description	Remark
101	X-4953-448-1	FOOT ASSY	
102	4-943-687-01	HOLDER, PC BOARD	
103	A-1786-278-A	MAIN BOARD, COMPLETE	
104	1-828-396-61	WIRE (FLAT TYPE) (27 CORE)	
105	3-703-249-02	SCREW, S TIGHT, +PTTWH 3X6	
106	1-828-390-61	WIRE (FLAT TYPE) (25 CORE)	

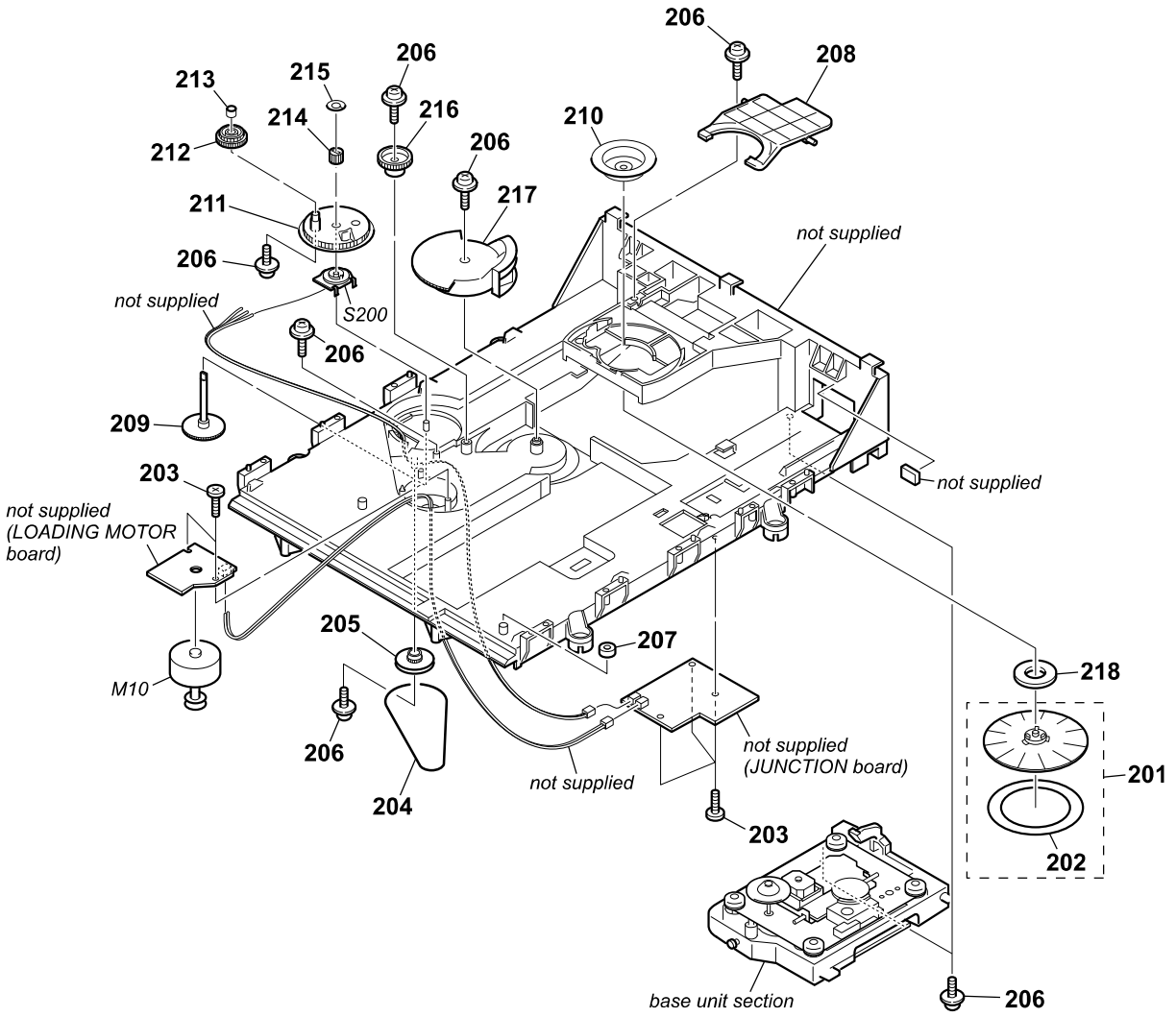
Ref. No.	Part No.	Description	Remark
107	A-1786-285-A	USB-AUDIO BOARD, COMPLETE	
⚠ 108	3-113-062-01	CORD BUSH (2104)	
⚠ 109	1-837-308-11	CORD, POWER-SUPPLY	
⚠ T102	1-445-925-11	POWER TRANSFORMER	
#1	7-685-646-71	SCREW +BVTP 3X8 TYPE2 IT-3	

3-4. CD MECHANISM DECK SECTION (TABLE BLOCK) (CDM59-DA11)



Ref. No.	Part No.	Description	Remark
151	4-224-619-01	BRACKET (GUIDE)	
152	4-218-253-32	SCREW (M2.6), +BTTP	
153	X-4947-960-1	ROLLER ASSY	
154	4-224-602-03	TABLE	
155	4-224-617-01	GEAR (RM-E)	
156	4-218-252-52	SCREW (+PTPWH M2.6), FLOATING	
157	4-224-616-01	GEAR (RM-M)	
158	4-224-615-03	GEAR (RM-B)	
159	4-225-328-01	BELT (ROTARY)	
160	4-224-603-06	TRAY	
161	1-791-930-11	WIRE (FLAT TYPE) (6 CORE)	
M11	A-4735-761-A	MOTOR ASSY, ROTARY (TRAY)	

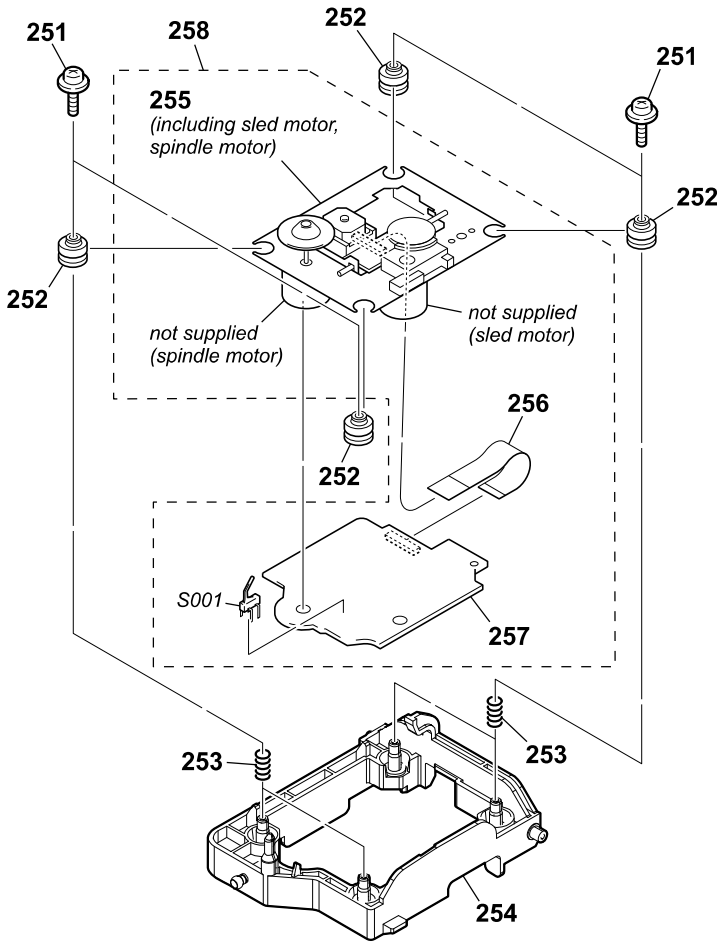
3-5. CD MECHANISM DECK SECTION (CHASSIS BLOCK) (CDM59-DA11)



Note: When GEAR (RV), GEAR (U/D) and SWING GEAR are installed, it is necessary to phase it. Please refer to "2-11. GEAR (RV), GEAR (U/D), SWING GEAR" (page 13).

Ref. No.	Part No.	Description	Remark
201	X-2549-868-1	PULLEY, CHUCKING (DA11) ASSY	
202	4-231-777-02	SHEET (KH2)	
203	4-218-253-32	SCREW (M2.6), +BTTP	
204	4-225-885-01	BELT (LOADING)	
205	4-225-844-01	GEAR (LOADING A)	
206	4-218-252-52	SCREW (+PTPWH M2.6), FLOATING	
207	4-951-619-11	CUSHION (A)	
208	4-224-618-01	LEVER (LIFTER)	
209	4-224-613-11	GEAR (SHAFT)	
210	4-221-688-01	PULLEY (B), CHUCKING	
211	4-224-607-01	GEAR, SWING	
212	4-224-609-01	GEAR (LOADING C)	
213	4-224-608-01	COLLAR, SWING	
214	4-224-611-01	GEAR (LOADING B)	
215	3-016-533-11	WASHER (FR), STOPPER	
216	4-224-606-01	GEAR (RV)	
217	4-224-605-01	GEAR (U/D)	
218	1-471-061-11	MAGNET ASSY	
M10	A-4735-762-A	MOTOR ASSY, LOADING (LOADING)	
S200	1-418-746-11	ENCODER, ROTARY (BU/TABLE ADDRESS DETECT)	

3-6. BASE UNIT SECTION



Note: When you install the insulator, please refer to "2-15. BASE UNIT (BU-DA11BD75)" on page 16.

Ref. No.	Part No.	Description	Remark
251	4-985-672-01	SCREW (+PTPWH M2.6), FLOATING	
252	4-227-549-11	INSULATOR	
253	4-227-045-11	SPRING (INSULATOR), COIL	
254	X-2548-321-1	HOLDER (BU DA11) ASSY	
⚠ 255	1-856-037-11	OPTICAL PICK-UP (DA11MMVGP) (Including sled motor, spindle motor)	

Ref. No.	Part No.	Description	Remark
256	1-834-268-21	WIRE (FLAT TYPE) (16 CORE)	
257	A-1786-283-A	BD75 BOARD, COMPLETE	
⚠ 258	A-1786-329-A	BU-DA11BD75	
S001	1-771-853-11	SWITCH, DETECTION (LIMIT)	

SECTION 4
ACCESSORIES

Ref. No.	Part No.	Description	Remark
	1-489-223-11	REMOTE COMMANDER (RM-ASU100)	
	1-790-735-12	CORD, CONNECTION (Audio cord (Red and White))	
	4-209-089-11	MANUAL, INSTRUCTION (ENGLISH)	